

Dear Dietitian



Q1: I was recently diagnosed with diabetes and was told that carbohydrate will raise my blood sugar level. Should I abstain from taking carbohydrate in my diet and what kind of foods contain carbohydrate?

A: It is commonly perceived that people with diabetes are not allowed to take any sugar or sugary foods. But the culprit is not only sugar but also carbohydrates which include rice, breads, biscuits, noodles, pasta, starchy vegetables such as potatoes, yam, tapioca or even various kinds of fruits. Carbohydrates taken in large amounts at the same time will affect a patient's blood sugar level and create a spike.

However, people with diabetes need not have to abstain totally from eating carbohydrate foods. This is because carbohydrates are the main source of energy for the body, especially brain cells, to carry out metabolic activities and help with your concentration. Moreover, carbohydrate foods contain other nutrients such as fibre, vitamins, minerals and phytochemicals.

People with diabetes should, therefore, adopt a healthy eating pattern based on the Singapore Healthy Diet Pyramid way of eating and incorporate moderate amounts of carbohydrate foods such as whole grain cereal-based products, brown rice, oatmeal,

legumes, fruits, vegetables and low fat milk as part of their daily diet.

Q2: What about carbohydrate counting and carbohydrate exchange? Is it useful for people with diabetes to learn and practise carbohydrate counting?

A: People with diabetes, especially those on insulin therapy, should be aware of carbohydrate exchange which is commonly used for carbohydrate counting in order to provide a wider range of food choices, flexible eating patterns and better blood sugar control. One carbohydrate exchange is equivalent to 15g of carbohydrate. The following are some examples of foods with serving portions which contain one carbohydrate exchange (15g carbohydrate):

Food Groups	Types of food	Serving portion
Rice and alternatives	Rice (white rice/ brown rice)	2 heaped tablespoons or 1 rice scoop, cooked
	Noodles/ Pasta	½ cup
	Breads	1 slice
	Plain crackers	3 pieces
	Oatmeal/ Cereals	3 heaped tablespoons
	Plain crackers	3 pieces
Fruits and fruit juices	Whole fruits e.g. apple, orange, pear, banana	1 small size
	Cut fruits, e.g. watermelon, papaya, honeydew	1 wedge
	Small fruits, e.g. grapes, longan, lychee, rambutan	About 6 to 8 or one fistful
	Unsweetened fruit juices	125ml or ½ cup

Vegetables (Starchy vegetables)	Potatoes/ Sweet Potato/ Yam/ Tapioca	½ medium size or ½ cup, cooked
	Pumpkin	1 cup
	Corn	1/3 large size
Meat and alternatives	Legumes	½ cup
	Unsweetened soy bean milk	1 cup
	Milk	250ml or 1 cup
	Plain yoghurt	1 small tub
Fats, oils, salt and sugar	Sugar	3 teaspoons
	Salt	Nil
	Fats, oils	Nil

According to the American Diabetes Association (ADA) Guidelines 2006, the total carbohydrate intake should not be less than 130g per day. People with diabetes should consult a dietitian to learn about carbohydrate counting. The following 3Ds steps will be done by your dietitian for carbohydrate counting and its distribution:

1. **Define** your total energy requirement based on your weight, height, age, daily diet, physical activity and other specific medical conditions.
2. **Determine** your total carbohydrate intake per day, which is usually 50 to 55% of your total energy requirement.
3. **Distribute** the total carbohydrate intake into separate meals or snacks throughout the day based on your insulin dosage and carbohydrate exchange serving portion.

For example:

1. Carbohydrate counting and distribution for a 1800kcal daily meal plan
2. Total carbohydrate intake per day: 50% of 1800kcal = 900kcal = 225g carbohydrate (1g carbohydrate = 4kcal) = 15 carbohydrate exchange (1 carbohydrate exchange = 15g).

3. Distribute throughout the daily meals or snacks by using 15 carbohydrate exchange as following table:

Meals	Carbohydrate exchange
Breakfast	4
Morning snack	1
Lunch	4
Afternoon snack	1
Dinner	4
Bedtime snack	1
Total	15

Q3: How about the carbohydrate content of our local hawker foods?

A: People with diabetes should be aware of the carbohydrate content of local hawker foods if they always eat out, so that they will be aware of portion control and the calories content for those common hawker foods. The following table is a list of common hawker foods with its calories, amount of carbohydrate and carbohydrate exchange.

Food item	Serving size	Per serving		
		Energy (kcal)	CHO (g)	Rounded CHO ex.
Fried Meehoon, Plain	1 plate	250	46	3.0
Fried Vegetarian Meehoon, Plain	1 plate	549	83	5.5
Chee Cheong Fan, Plain	1 roll	133	26	2.0
Porridge, Peanut and Pork	1 bowl	211	19	1.5
Roti Prata, with Onion	1 piece	304	33	2.0
Nasi Lemak	1 packet	494	80	5.0
Chwee Kway	1 small	56	11	1.0
Lontong	1 plate	466	43	3.0
Lor Mai Kai	1 whole	322	55	4.0
Beef Horfun	1 plate	697	95	6.0
Chicken Rice	1 plate	607	75	5.0
Char Siew Rice	1 plate	605	59	4.0
Nasi Briyani	1 plate	619	109	7.0
Penang Fried Kway Teow	1 plate	510	59	4.0
Lor Mee	1 bowl	383	55	4.0
Kway Chap	1 portion	703	82	5.5
Laksa Lemak	1 bowl	591	58	4.0
Mee Goreng	1 plate	500	61	4.0
Mee Siam	1 plate	694	92	6.0
Mee Rebus	1 plate	571	82	5.5

Source: Singapore Food Composition Table 2004, Health Promotion Board.

*CHO= Carbohydrate; CHO ex. = Carbohydrate exchange

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